

# SEQUENCE LISTING

<110> DORR, ALEXANDER P.  
OTT, MELANIE  
VERDIN, ERIC

<120> ACETYLATED TAT POLYPEPTIDES AND METHODS  
OF USE THEREOF

<130> UCAL-296

<140> Unassigned

<141> 2004-03-12

<150> 60/456,468

<151> 2003-03-19

<160> 65

<170> FastSEQ for Windows Version 4.0

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<212> PRT

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<222> (2)...(2)

<223> Xaa = Ala or Gly

<221> VARIANT

<222> (13)...(13)

<223> Xaa = Arg or Lys

<221> VARIANT

<222> (14)...(14)

<223> Xaa = Gln or His

<221> VARIANT

<222> (17)...(17)

<223> Xaa = Arg or Gly or Lys or Ser

<221> VARIANT

<222> (18)...(18)

<223> Xaa = Pro or Ala or Thr

<221> VARIANT

<222> (19)...(19)

<223> Xaa = Gln or Pro or Thr

<400> 1

Lys Xaa Leu Gly Ile Ser Tyr Gly Arg Lys Lys Arg Xaa Xaa Arg Arg

1

5

10

15

Xaa Xaa Xaa

<210> 2  
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<220>  
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<221> ACETYLATION  
<222> (5)...(5)  
<223> Xaa = Acetylated lysine

<400> 2  
Ser Tyr Gly Arg Xaa Lys Lys Arg Arg Gln Arg  
1 5 10

<210> 3  
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<220>  
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<221> ACETYLATION  
<222> (5)...(5)  
<223> Xaa = Acetylated lysine

<400> 3  
Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Cys  
1 5 10

<210> 4  
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<220>  
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<221> ACETYLATION  
<222> (5)...(5)  
<223> Xaa = Acetylated lysine

<400> 4  
Ser His Gly Arg Xaa Lys Arg Arg Gln Arg Cys  
1 5 10

<210> 5  
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<220>

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<221> ACETYLATION

<222> (10)...(10)

<223> Xaa = Acetylated lysine

<400> 5

Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Xaa	Lys	Arg	Arg	Gln	Arg	Arg
1				5					10					15	
Arg	Thr	Pro	Gln												
			20												

<210> 6

<211> 20

<212> PRT

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<221> ACETYLATION

<222> (10)...(10)

<223> Xaa = Acetylated lysine

<400> 6

Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Xaa	Lys	Arg	Arg	Gln	Arg	Arg
1				5					10					15	
Arg	Thr	Ser	Gln												
			20												

<210> 7

<211> 20

<212> PRT

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<220>

<223> synthetic protein

<221> ACETYLATION

<222> (10)...(10)

<223> Xaa = Acetylated lysine

<400> 7

Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Xaa	Lys	Arg	Arg	Gln	Arg	Arg
1				5					10					15	
Arg	Thr	Ala	Gln												
			20												

<210> 8

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

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<221> ACETYLTATION  
<222> (10)...(10)  
<223> Xaa = Acetylated lysine

<400> 8  
Lys Gly Leu Gly Ile Ser His Gly Arg Xaa Lys Arg Arg Gln Arg Arg  
1 5 10 15  
Arg Thr Pro Pro  
20

<210> 9  
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<220>  
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<221> ACETYLTATION  
<222> (10)...(10)  
<223> Xaa = Acetylated lysine

<400> 9  
Lys Gly Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Arg  
1 5 10 15  
Arg Ala Ala Gln  
20

<210> 10  
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<221> ACETYLTATION  
<222> (10)...(10)  
<223> Xaa = Acetylated lysine

<400> 10  
Lys Gly Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Arg  
1 5 10 15  
Arg Ala Pro Gln  
20

<210> 11  
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<220>  
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<221> ACETYLTATION  
<222> (10)...(10)

<223> Xaa = acetylated lysine

<400> 11

Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Xaa	Lys	Arg	Arg	Gln	Arg	Arg
1				5					10				15		
Arg	Ser	Pro	Gln												
			20												

<210> 12

<211> 20

<212> PRT

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<220>

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<221> ACETYLATION

<222> (10)...(10)

<223> Xaa = acetylated lysine

<400> 12

Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Xaa	Lys	Arg	Arg	Gln	Arg	Arg
1				5					10				15		
Arg	Pro	Pro	Gln												
			20												

<210> 13

<211> 20

<212> PRT

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<220>

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<221> ACETYLATION

<222> (10)...(10)

<223> Xaa = Acetylated lysine

<400> 13

Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Xaa	Lys	Arg	Arg	Gln	Arg	Arg
1				5					10				15		
Arg	Thr	His	Gln												
			20												

<210> 14

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic protein

<221> ACETYLATION

<222> (9)...(9)

<223> Xaa = acetylated lysine

<400> 14  
 Gly Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Arg Arg  
   1                  5                  10                  15  
 Thr Pro

<210> 15  
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<220>  
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<221> ACETYLATION  
 <222> (9)...(9)  
 <223> Xaa = acetylated lysine

<400> 15  
 Ala Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Arg Arg  
   1                  5                  10                  15  
 Thr Ser

<210> 16  
 <211> 18  
 <212> PRT  
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<220>  
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<221> ACETYLATION  
 <222> (9)...(9)  
 <223> Xaa = acetylated lysine

<400> 16  
 Ala Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Arg Arg  
   1                  5                  10                  15  
 Thr Ala

<210> 17  
 <211> 18  
 <212> PRT  
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<220>  
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<221> ACETYLATION  
 <222> (9)...(9)  
 <223> Xaa = acetylated lysine

<400> 17  
 Gly Leu Gly Ile Ser His Gly Arg Xaa Lys Arg Arg Gln Arg Arg Arg



<210> 21  
<211> 18  
<212> PRT  
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<220>  
<223> synthetic protein

<221> ACETYLATION  
<222> (9)...(9)  
<223> Xaa = acetylated lysine

<400> 21  
Gly Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Arg Arg  
1 5 10 15  
Pro Pro

<210> 22  
<211> 18  
<212> PRT  
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<220>  
<223> synthetic protein

<221> ACETYLATION  
<222> (9)...(9)  
<223> Xaa = acetylated lysine

<400> 22  
Gly Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg Gln Arg Arg Arg  
1 5 10 15  
Thr His

<210> 23  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic protein

<221> ACETYLATION  
<222> (10)...(10)  
<223> Xaa = acetylated lysine

<400> 23  
Lys Gly Leu Gly Ile Ser Tyr Gly Arg Xaa Lys Arg Arg His Arg Arg  
1 5 10 15  
Arg Thr Pro Gln  
20



<210> 24  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic protein

<400> 24  
Ala Ala Ala Gly Gly Met  
1 5

<210> 25  
<211> 14  
<212> PRT  
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<220>  
<223> synthetic protein

<400> 25  
Ala Ala Ala Gly Gly Met Pro Pro Ala Ala Ala Gly Gly Met  
1 5 10

<210> 26  
<211> 6  
<212> PRT  
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<220>  
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<400> 26  
Ala Ala Ala Gly Gly Met  
1 5

<210> 27  
<211> 8  
<212> PRT  
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<220>  
<223> synthetic protein

<400> 27  
Pro Pro Ala Ala Ala Gly Gly Met  
1 5

<210> 28  
<211> 10  
<212> PRT  
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<220>

<223> synthetic protein

<400> 28

Met Glu Pro Val Asp Pro Ser Leu Glu Pro  
1 5 10

<210> 29

<211> 15

<212> PRT

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<220>

<223> synthetic protein

<400> 29

Met Glu Pro Val Asp Pro Ser Leu Glu Pro Trp Lys His Pro Gly  
1 5 10 15

<210> 30

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic protein

<400> 30

Met Glu Pro Val Asp Pro Ser Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr  
20

<210> 31

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic protein

<400> 31

Pro Ser Leu Glu Pro Trp Lys His Pro Gly Ser Gln Pro Lys Thr  
1 5 10 15

<210> 32

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic protein

<400> 32

Pro Ser Leu Glu Pro Trp Lys His Pro Gly Ser Gln Pro Lys Thr Ala  
1 5 10 15

Cys Asn Asn Cys  
20

<210> 33  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic protein

<400> 33  
Trp Lys His Pro Gly Ser Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr  
1 5 10 15  
Cys Lys Arg Cys  
20

<210> 34  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic protein

<400> 34  
Ser Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Arg Cys  
1 5 10 15

<210> 35  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic protein

<400> 35  
Ser Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Arg Cys Cys  
1 5 10 15  
Phe His Cys Gln  
20

<210> 36  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic protein

<400> 36  
Ala Cys Asn Asn Cys Tyr Cys Lys Arg Cys Cys Phe His Cys Gln Val  
1 5 10 15  
Cys Phe Ile Lys

<210> 37  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> synthetic protein

<400> 37  
 Tyr Cys Lys Arg Cys Cys Phe His Cys Gln Val Cys Phe Ile Lys Lys  
 1 5 10 15  
 Gly Leu Gly Ile  
 20

<210> 38  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 38  
 ttgcctgtac tgggtctctc tg 22

<210> 39  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 39  
 tcgctttcag gtccctgttc g 21

<210> 40  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 40  
 tgcatagaag gaccagata ggtc 24

<210> 41  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 41  
tcaatgaccc tgagcccaag

20

<210> 42  
<211> 101  
<212> PRT  
<213> human immunodeficiency virus

<400> 42  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
50 55 60  
His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
85 90 95  
Thr Asp Pro Phe Asp  
100

<210> 43  
<211> 86  
<212> PRT  
<213> human immunodeficiency virus

<400> 43  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
50 55 60  
His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu  
85

<210> 44  
<211> 86  
<212> PRT  
<213> human immunodeficiency virus

<400> 44  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala Pro Gln Gly Ser Gln Thr  
50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu  
85

<210> 45  
<211> 86  
<212> PRT  
<213> human immunodeficiency virus

<400> 45  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
50 55 60  
His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Pro Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu  
85

<210> 46  
<211> 86  
<212> PRT  
<213> human immunodeficiency virus

<400> 46  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Thr Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Thr Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
50 55 60  
His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Pro Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu  
85

<210> 47  
<211> 101  
<212> PRT  
<213> human immunodeficiency virus

<400> 47  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Tyr  
20 25 30  
His Cys Gln Val Cys Phe Leu Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Gly Pro Pro Gln Gly Ser Gln Thr

50		55		60											
His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Pro	Arg	Gly	Asp
65				70						75				80	
Pro	Thr	Pro	Lys	Glu	Ser	Lys	Glu	Lys	Val	Glu	Arg	Glu	Thr	Glu	Thr
			85						90					95	
Asp	Pro	Ala	Val	Gln											
			100												

<210> 48  
 <211> 86  
 <212> PRT  
 <213> human immunodeficiency virus

<400> 48															
Met	Glu	Pro	Val	Asp	Pro	Arg	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1			5						10					15	
Gln	Pro	Lys	Thr	Ala	Cys	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		
His	Cys	Gln	Val	Cys	Phe	Ile	Thr	Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly
		35					40					45			
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Ala	His	Gln	Asn	Ser	Gln	Thr
		50				55					60				
His	Gln	Ala	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Pro	Arg	Gly	Asp
65				70						75				80	
Pro	Thr	Gly	Pro	Lys	Glu										
				85											

<210> 49  
 <211> 101  
 <212> PRT  
 <213> human immunodeficiency virus

<400> 49															
Met	Glu	Pro	Val	Asp	Pro	Arg	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1			5						10					15	
Gln	Pro	Lys	Thr	Ala	Cys	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		
His	Cys	Gln	Val	Cys	Phe	Thr	Lys	Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly
		35					40					45			
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Ala	His	Gln	Asp	Ser	Gln	Asn
		50				55					60				
His	Gln	Ala	Ser	Leu	Ser	Lys	Gln	Pro	Ser	Ser	Gln	Thr	Arg	Gly	Asp
65				70						75				80	
Pro	Thr	Gly	Pro	Lys	Glu	Pro	Lys	Lys	Glu	Val	Glu	Arg	Glu	Ala	Glu
				85					90					95	
Thr	Asp	Pro	Leu	Asp											
			100												

<210> 50  
 <211> 101  
 <212> PRT  
 <213> human immunodeficiency virus

<400> 50															
Met	Glu	Pro	Val	Asp	Pro	Asn	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1			5						10					15	

Gln Pro Arg Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
                   20                  25                  30  
 His Cys Gln Val Cys Phe Ile Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
                   35                  40                  45  
 Arg Lys Lys Arg Arg Gln Arg Gln Arg Ala Pro Asp Ser Ser Gln Asn  
                   50                  55                  60  
 His Gln Asp Ser Leu Ser Lys Gln Pro Ser Ser Gln Pro Arg Gly Asp  
 65                  70                  75                  80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Glu Val Glu Arg Glu Thr Glu  
                   85                  90                  95  
 Thr Asp Pro Leu Asp  
                   100

<210> 51  
 <211> 86  
 <212> PRT  
 <213> human immunodeficiency virus

<400> 51  
 Met Asp Pro Val Asp Pro Asn Leu Glu Pro Trp Asn His Pro Gly Ser  
   1                  5                  10                  15  
 Gln Pro Lys Thr Ala Cys Asn Arg Cys His Cys Lys Lys Cys Cys Tyr  
                   20                  25                  30  
 His Cys Gln Val Cys Phe Ile Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
                   35                  40                  45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Ser Gln Gly Gly Gln Thr  
                   50                  55                  60  
 His Gln Asp Pro Ile Pro Lys Gln Pro Ser Ser Gln Pro Arg Gly Asn  
 65                  70                  75                  80  
 Pro Thr Gly Pro Lys Glu  
                   85

<210> 52  
 <211> 86  
 <212> PRT  
 <213> human immunodeficiency virus

<400> 52  
 Met Asp Pro Val Asp Pro Asn Ile Glu Pro Trp Asn His Pro Gly Ser  
   1                  5                  10                  15  
 Gln Pro Lys Thr Ala Cys Asn Arg Cys His Cys Lys Lys Cys Cys Tyr  
                   20                  25                  30  
 His Cys Gln Val Cys Phe Ile Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
                   35                  40                  45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Ser Gln Gly Gly Gln Thr  
                   50                  55                  60  
 His Gln Asp Pro Ile Pro Lys Gln Pro Ser Ser Gln Pro Arg Gly Asp  
 65                  70                  75                  80  
 Pro Thr Gly Pro Lys Glu  
                   85

<210> 53  
 <211> 99  
 <212> PRT  
 <213> human immunodeficiency virus



<400> 53

Met Asp Pro Val Asp Pro Asn Leu Glu Pro Trp Asn His Pro Gly Ser  
1 5 10 15  
Gln Pro Arg Thr Pro Cys Asn Lys Cys His Cys Lys Lys Cys Cys Tyr  
20 25 30  
His Cys Pro Val Cys Phe Leu Asn Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Gly Pro Pro Gln Gly Gly Gln Ala  
50 55 60  
His Gln Val Pro Ile Pro Lys Gln Pro Ser Ser Gln Pro Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu Gln Lys Lys Lys Val Glu Ser Glu Ala Glu  
85 90 95  
Thr Asp Pro

<210> 54

<211> 86

<212> PRT

<213> human immunodeficiency virus

<400> 54

Met Asp Pro Val Asp Pro Asn Leu Glu Ser Trp Asn His Pro Gly Ser  
1 5 10 15  
Gln Pro Arg Thr Ala Cys Asn Lys Cys His Cys Lys Lys Cys Cys Tyr  
20 25 30  
His Cys Gln Val Cys Phe Ile Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Lys Pro Pro Gln Gly Asp Gln Ala  
50 55 60  
His Gln Val Pro Ile Pro Glu Gln Pro Ser Ser Gln Ser Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Lys  
85

<210> 55

<211> 87

<212> PRT

<213> human immunodeficiency virus

<400> 55

Met Asp Pro Val Asp Pro Asn Leu Glu Pro Trp Asn His Pro Gly Ser  
1 5 10 15  
Gln Pro Arg Thr Pro Cys Asn Lys Cys Tyr Cys Lys Lys Cys Cys Tyr  
20 25 30  
His Cys Gln Met Cys Phe Ile Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Asn Gln Ala  
50 55 60  
His Gln Asp Pro Leu Pro Glu Gln Pro Ser Ser Gln His Arg Gly Asp  
65 70 75 80  
His Pro Thr Gly Pro Lys Glu  
85

<210> 56

<211> 101

<212> PRT

<213> human immunodeficiency virus

<400> 56

Met	Glu	Pro	Val	Asp	Pro	Asn	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1				5					10					15	
Gln	Pro	Thr	Thr	Ala	Cys	Ser	Asn	Cys	Tyr	Cys	Lys	Val	Cys	Cys	Trp
			20					25					30		
His	Cys	Gln	Leu	Cys	Phe	Leu	Lys	Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly
		35					40					45			
Lys	Lys	Lys	Arg	Lys	Pro	Arg	Arg	Gly	Pro	Pro	Gln	Gly	Ser	Lys	Asp
	50					55					60				
His	Gln	Thr	Leu	Ile	Pro	Lys	Gln	Pro	Leu	Pro	Gln	Ser	Gln	Arg	Val
65					70				75					80	
Ser	Ala	Gly	Gln	Glu	Glu	Ser	Lys	Lys	Lys	Val	Glu	Ser	Lys	Ala	Lys
				85					90					95	
Thr	Asp	Arg	Phe	Ala											
			100												

<210> 57

<211> 101

<212> PRT

<213> human immunodeficiency virus

<400> 57

Met	Glu	Pro	Val	Asp	Pro	Asn	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1				5					10					15	
Gln	Pro	Arg	Thr	Ala	Cys	Asn	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		
His	Cys	Tyr	Ala	Cys	Phe	Thr	Arg	Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly
		35					40					45			
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Ala	Pro	Gln	Asp	Ser	Gln	Thr
	50					55					60				
His	Gln	Ala	Ser	Leu	Ser	Lys	Gln	Pro	Ala	Ser	Gln	Ser	Arg	Gly	Asp
65					70				75					80	
Pro	Thr	Gly	Pro	Thr	Glu	Ser	Lys	Lys	Lys	Val	Glu	Arg	Glu	Thr	Glu
				85					90					95	
Thr	Asp	Pro	Phe	Asp											
			100												

<210> 58

<211> 101

<212> PRT

<213> human immunodeficiency virus

<400> 58

Met	Glu	Pro	Val	Asp	Pro	Asn	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1				5					10					15	
Gln	Pro	Arg	Thr	Ala	Cys	Asn	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		
His	Cys	Gln	Val	Cys	Phe	Thr	Lys	Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly
		35					40					45			
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln	Asp	Ser	Gln	Thr
	50					55					60				
His	Gln	Ser	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Leu	Arg	Gly	Asp
65					70				75					80	
Pro	Thr	Gly	Pro	Thr	Glu	Ser	Lys	Lys	Lys	Val	Glu	Arg	Glu	Thr	Glu

85  
Thr Asp Pro Val His  
100

90

95

<210> 59  
<211> 101  
<212> PRT  
<213> human immunodeficiency virus

<400> 59  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Ser Asn Asn Cys Tyr Cys Lys Arg Cys Cys Leu  
20 25 30  
His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Ala Pro Gln Asp Ser Lys Thr  
50 55 60  
His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
85 90 95  
Thr Asp Pro Glu Asp  
100

<210> 60  
<211> 58  
<212> PRT  
<213> human immunodeficiency virus

<400> 60  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Thr Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala  
50 55

<210> 61  
<211> 101  
<212> PRT  
<213> human immunodeficiency virus

<400> 61  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Thr Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Thr Lys Lys Ala Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala Pro Glu Asp Ser Gln Thr  
50 55 60  
His Gln Val Ser Leu Pro Lys Gln Pro Ala Pro Gln Phe Arg Gly Asp  
65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
85 90 95  
Thr His Pro Val Asp  
100

<210> 62  
<211> 101  
<212> PRT  
<213> human immunodeficiency virus

<400> 62  
Met Asp Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Ala Ala Cys Thr Ser Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Thr Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala Pro Gln Asp Ser Gln Thr  
50 55 60  
His Gln Val Ser Leu Pro Lys Gln Pro Ala Ser Gln Ala Arg Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
85 90 95  
Thr Asp Pro Val Asp  
100

<210> 63  
<211> 101  
<212> PRT  
<213> human immunodeficiency virus

<400> 63  
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30  
His Cys Gln Val Cys Phe Ile Thr Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45  
Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala Pro Pro Asp Ser Glu Val  
50 55 60  
His Gln Val Ser Leu Pro Lys Gln Pro Ala Ser Gln Pro Gln Gly Asp  
65 70 75 80  
Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
85 90 95  
Thr Asp Pro Val His  
100

<210> 64  
<211> 101  
<212> PRT  
<213> human immunodeficiency virus

<400> 64  
Met Glu Pro Val Asp Pro Ser Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15  
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Leu

		20						25				30				
His	Cys	Gln	Val	Cys	Phe	Thr	Thr	Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly	
		35						40				45				
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln	Asp	Ser	Gln	Thr	
		50					55				60					
His	Gln	Val	Ser	Leu	Pro	Lys	Gln	Pro	Ser	Ser	Gln	Gln	Arg	Gly	Asp	
65					70					75					80	
Pro	Thr	Gly	Pro	Lys	Glu	Ser	Lys	Lys	Lys	Val	Glu	Arg	Glu	Thr	Glu	
				85					90					95		
Thr	Asp	Pro	Asp	Asn												
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<210> 65  
 <211> 101  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> consensus sequence

Met	Glu	Pro	Val	Asp	Pro	Arg	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser	
1				5					10					15		
Gln	Pro	Lys	Thr	Ala	Cys	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe	
			20					25					30			
His	Cys	Gln	Val	Cys	Phe	Ile	Thr	Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	
		35					40					45				
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln	Gly	Ser	Gln	Thr	
		50					55				60					
His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Ser	Arg	Gly	Asp	
65					70					75					80	
Pro	Thr	Gly	Pro	Lys	Glu	Ser	Lys	Lys	Lys	Val	Glu	Arg	Glu	Thr	Glu	
				85					90					95		
Thr	Asp	Pro	Phe	Asp												
				100												